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09/884,906	06/21/2001	Tae-Ho Yoon	05823.0204	4767

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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP
1300 I STREET, NW
WASHINGTON, DC 20005

EXAMINER

TSOY, ELENA

ART UNIT	PAPER NUMBER
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1762

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DATE MAILED: 06/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,906

Applicant(s)

YOON ET AL.

Examiner

Elena Tsoy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Response to Amendment

Amendment filed on April 14, 2003 has been entered. Claims 1-14 are pending in the application. New claims 5-14 have been added. Claims 3, 4 are withdrawn from consideration as directed to a non-elected invention.

Specification

1. The disclosure is objected to because of the following informalities:
page 4, three bottom lines, "25-35 °C" should be changed to -- 25-35 **microns** --.

Claim Objections

2. Objection to claims 1, 2 because of the informalities has been withdrawn.
3. Claims 8 and 13 are objected to because of the following informalities: "silicon rubber" is advised to change to "silicone rubber" to conform to a term conventionally used in the art.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Rejection of claims 1, 2 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been withdrawn.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. **Claims 1, 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' admitted state of the art in view of France et al (US 6,428,861).

Applicants admitted that it is well known in the art to modify the surface of silica with silane coupling agents for the use in EMC, consisting of silica and epoxy resin as major ingredients, to improve adhesion of silica to epoxy resin since the silane coupling agents are known to form chemical bonds between silica and epoxy resin (See specification, pages 1 and 2). However, it is not known in the art to modify silica surface by plasma polymerization coating with a monomer selected from the group consisting of allylamine and allyl alcohol to improve adhesion of silica to epoxy resin.

France et al teach that modifying the surface of silica powder (See column 1, lines 47-62) by coating the silica using plasma polymerization (See column 2, lines 66-67) of a monomer, wherein said monomer is aliphatic vinyl compounds of general formula $R_2CH=CHR_3$, where R_2 is hydrogen, and R_3 is aliphatic hydrocarbon group of up to 10 carbon atoms that is substituted by hydroxy, amino, etc., i.e. said monomer is allylamine or allyl alcohol (See column 8, lines 7-12) can be used to improve the flowability, dispersability, solubility and *adhesive properties* for the use in rubber, paint etc. (See column 1, lines 47-62). Plasma polymerization coating comprises the steps of: 1) charging silica powder into a plasma polymerization reactor (See column 5, lines 44-50), followed by vacuuming to *at least* 20 mtorr (i.e., less than 2×10^{-3} torr) (See column 6, lines 35-48); 2) introducing a monomer into the reactor (See column 5, lines 45-58; column 7, lines 12-14); and 3) rotating the reactor, with conditions of having a residence (treatment) time of 0.001-60 seconds (See column 7, lines 50-57); wherein the silica powder has size of 10-30 microns (See column 2, lines 51-54).

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The Examiner Note: it is well known in the art that hydroxy and amino groups are reactive toward epoxy groups. In other words, coating of plasma polymerized allylamine or allyl alcohol would provide silica surface with hydroxy and amino groups, which would form chemical bonds between silica and epoxy resin thereby improving *adhesive properties* of silica for resins.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified silica surface for the use in EMC of applicants' admitted state of the art by coating the silica surface using plasma polymerization of allylamine or allyl alcohol with the expectation of providing the desired improved adhesive properties of silica for resins, as taught by France et al.

As to claim 9, it is the Examiner's position that the plasma polymerization coating is effective to enhance the flexural strength of the EMC of applicants' admitted state of the art in view of France et al *inherently* since it is produced by a method identical or substantially identical processes to that of claimed invention.

It is held that where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, *claimed properties or functions are presumed to be inherent*. See MPEP 2111.02, 2112.01. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

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8. **Claims 2, 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' admitted state of the art in view of France et al (US 6,428,861), as applied above, and further in view of Drauglis et al (US 4,374,717).

France et al, as applied above, further teach that plasma glow discharge is generated using e.g. radio frequency (See column 7, lines 32-37). However, France et al fail to teach an operating power level.

Applicants' admitted state of the art in view of France et al fail to teach that plasma power is of 10-40W, and reactor is rotated at 1-50 rpm.

Drauglis et al teach that deposition rates of acetonitrile polymer from acetonitrile monomer are directly proportional to power level and operating pressure; and for the polymerization of acetonitrile monomer it is preferred to operate radio frequency generating apparatus at a power level of 25 Watts (See column 3, lines 62-68; column 4, lines 1-24). In other words, power level is one of result-effective parameters in plasma polymerization coating process. Also it is clear from teaching of France et al that rotating speed of the plasma polymerization reactor is also one of result-effective parameters.

It is held that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant polymerization coating process parameters (including claimed power level of 10-40 W and claimed rotating speed of 1-50 rpm)

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in a plasma polymerization process of France et al through routine experimentation in the absence of a showing of criticality.

As to claim 14, it is the Examiner's position that the plasma polymerization coating is effective to enhance the flexural strength of the EMC of applicants' admitted state of the art in view of France et al, further in view of Drauglis et al *inherently* since it is produced by a method identical or substantially identical processes to that of claimed invention.

It is held that where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, *claimed properties or functions are presumed to be inherent*. See MPEP 2111.02, 2112.01. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

9. **Claims 5-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' admitted state of the art in view of France et al (US 6,428,861), as applied above, and further in view of JP 01038418.

Applicants' admitted state of the art in view of France et al, as applied above, fails to teach that the epoxy resin comprises hardener and a promoter (Claim 5); combining the surface modified silica and epoxy resin to form EMC comprises forming a homogeneous mixture (Claim 6) and introducing the homogeneous mixture into the mold (Claim 7) such as silicone rubber mold (Claim 8).

JP 01038418 teaches that a molding material for sealing electronic components prepared by adding a silicone rubber to epoxy resin molding material prepared by adding a crosslinking agent (hardener), a cure accelerator (promoter), a coupling agent and a filler to an epoxy resin has improved cracking resistance.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared EMC of applicants' admitted state of the art in view of France et al by adding a silicone rubber to epoxy resin molding material prepared from a homogeneous mixture of an epoxy resin, surface modified silica, a crosslinking agent (hardener) and a cure accelerator (promoter) with the expectation of providing the desired improved cracking resistance, since JP 01038418 teaches that a molding material for sealing electronic components prepared by adding a silicone rubber to epoxy resin molding material prepared by adding a crosslinking agent (hardener), a cure accelerator (promoter), a coupling agent and a filler to an epoxy resin has improved cracking resistance.

Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared EMC of applicants' admitted state of the art in view of France et al by adding epoxy resin molding material prepared from a homogeneous mixture of an epoxy resin, surface modified silica, a crosslinking agent (hardener) and a cure accelerator (promoter) to a silicone rubber with the expectation of providing the desired improved cracking resistance.

10. **Claims 10-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' admitted state of the art in view of France et al (US 6,428,861), further in view of Drauglis et al (US 4,374,717), as applied above, and further in view of JP 01038418.

Applicants' admitted state of the art in view of France et al, further in view of Drauglis et al, as applied above, fails to teach that the epoxy resin comprises hardener and a promoter (Claim 10); combining the surface modified silica and epoxy resin to form EMC comprises forming a homogeneous mixture (Claim 11) and introducing the homogeneous mixture into the mold (Claim 12) such as silicone rubber mold (Claim 13).

JP 01038418 teaches that a molding material for sealing electronic components prepared by adding a silicone rubber to epoxy resin molding material prepared by adding a crosslinking agent (hardener), a cure accelerator (promoter), a coupling agent and a filler to an epoxy resin has improved cracking resistance (See Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared EMC of applicants' admitted state of the art in view of France et al, further in view of Drauglis et al by adding a silicone rubber to epoxy resin molding material prepared from a homogeneous mixture of an epoxy resin, surface modified silica, a crosslinking agent (hardener) and a cure accelerator (promoter) with the expectation of providing the desired improved cracking resistance, since JP 01038418 teaches that a molding material for sealing electronic components prepared by adding a silicone rubber to epoxy resin molding material prepared by adding a crosslinking agent (hardener), a cure accelerator (promoter), a coupling agent and a filler to an epoxy resin has improved cracking resistance.

Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have prepared EMC of applicants' admitted state of the art in view of France et al, further in view of Drauglis et al by adding epoxy resin molding material prepared from a homogeneous mixture of an epoxy resin, surface modified silica, a crosslinking agent

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(hardener) and a cure accelerator (promoter) to a silicone rubber with the expectation of providing the desired improved cracking resistance.

Response to Arguments

11. Applicant's arguments with respect to claims 1 and 2 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (703) 605-1171. The examiner can normally be reached on 9:00-5:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

ET

Elena Tsoy
Examiner
Art Unit 1762

June 17, 2003


SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700